

Notice of Allowability

Application No.

09/851,375

Examiner

Brian J. Sines

Applicant(s)

SHVETS ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the response filed 1/20/2004.
2. ☒ The allowed claim(s) is/are 1-54.
3. ☒ The drawings filed on 19 May 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION**EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with James M. Slattery on 6/10/2004.

The application has been amended as follows:

1. A liquid outlet link assembly to provide a steady liquid delivery output rate below $10 \mu\text{l}/\text{minute}$ through a liquid outlet means from a positive displacement pump having an immediate step pumping rate which is relatively substantially larger than the delivery rate through the liquid outlet means comprising:

a body having a hollow interior;

a liquid inlet in the body of the link assembly for connection to the pump;

a liquid outlet in the body for connection to the liquid outlet means, said outlet means [having a flow restrictor] comprising a microchannel whereby a resistance to flow to the liquid outlet means is substantially greater than through the hollow interior of the body; and

pressure compressible means which contracts to reduce the pressure surge of a liquid within the body when the liquid is delivered by the pump at an increased pressure through the liquid inlet, and then gradually expands to decrease the pressure drop of the

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liquid within the body as it is delivered through the liquid outlet, so as to maintain a substantially steady liquid pressure at the liquid outlet.

13. A liquid outlet link assembly to provide a steady liquid delivery output rate below $10\ \mu\text{l}/\text{minute}$ through a liquid outlet means from a positive displacement pump having an immediate step pumping rate which is relatively substantially larger than the delivery rate through the liquid outlet means comprising:

a body having a hollow interior;

a liquid inlet in the body of the link assembly for connection to the pump;

a liquid outlet in the body for connection to the liquid outlet means, said outlet means [having a flow restrictor] comprising a microchannel whereby a resistance to flow to the liquid outlet means is substantially greater than through the hollow interior of the body; and

a gas bubble in the body to create a liquid pressure at the liquid outlet to provide the desired liquid delivery flow rate through the liquid outlet means.

Allowable Subject Matter

Claims 1 – 54 are allowed.

The following is an examiner's statement of reasons for allowance:

The cited prior art neither teach or fairly suggest the further incorporation within the apparatus of Van Lintel the pressure compressible means as recited in claim 1. The cited prior art neither teach or fairly suggest the further incorporation of a pressure compressible means comprising a gas bubble. The cited prior art neither teach or fairly suggest the further incorporation of expandable tubing, which forms the pressure compressible means. The cited prior art neither teach or fairly suggest the further

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incorporation of a means for sensing the flow conditions within the outlet means; and a means for causing the apparatus to operate in response to the sensed flow conditions.

The cited prior art neither teach or fairly suggest the further incorporation of a liquid take-off means included in the outlet in the body of the apparatus, which enables the flow rates of the liquid in the apparatus and the liquid outlet means to be substantially equal.

The cited prior art neither teach or fairly suggest the further incorporation of a recirculation pipe included in the liquid outlet of the body of the apparatus, which is connected between the liquid outlet and the body. The cited prior art neither teach or fairly suggest the incorporation of a positive displacement pump with a liquid outlet link assembly comprising a pressure compressible means.

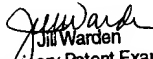
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Sines, Ph.D. whose telephone number is (571) 272-1263. The examiner can normally be reached on Monday - Friday (11:30 AM - 8 PM EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jill Warden
Supervisory Patent Examiner
Technology Center 1700